



US Army Corps
of Engineers
North Central Division

GREAT LAKES LEVELS

UPDATE No. 63

OCTOBER 1, 1990

Great Lakes basin precipitation was near average in September. The following tables show estimated precipitation for September and for the year to date.

Provisional Great Lakes Precipitation (inches)

I. September

Basin	1990*	1900-89 Average	Diff.	% of Ave.
Superior	3.5	3.5	0.0	100%
Mich-Huron	3.2	3.4	-0.2	94%
Erie	4.8	3.1	+1.7	155%
Ontario	2.2	3.1	-0.9	71%
Great Lakes	3.4	3.4	0.0	100%

II. Year to Date (January - September)

Basin	1990*	1900-89 Average	Diff.	% of Ave.
Superior	24.2	22.9	+1.3	106%
Mich-Huron	27.0	23.9	+3.1	113%
Erie	34.8	26.3	+8.5	132%
Ontario	30.0	25.8	+4.2	116%
Great Lakes	27.7	24.2	+3.5	114%

* Estimated

During the past 12 months, total precipitation on the Great Lakes basin has been about 3.3 inches (10 percent) above average. Lake Superior has accumulated near-average precipitation. Lakes Michigan-Huron, Erie, and Ontario have had total precipitation about 2.9 inches (9 percent), 8.1 inches (24 percent), and 5.5 inches (16 percent), respectively, above average.

The National Weather Service is forecasting basin-wide precipitation during October to be near average, with temperatures close to or slightly above average.

The water levels of Lake Superior held steady in September with all of the other Great Lake levels in their seasonal declines.

This month's update letter continues the series on water level fluctuations and related subjects. Our topic this month is Lake Ontario outflow regulation plans -- their development and possible improvement.

Management of Lake Ontario's water was established by a 1952 International Joint Commission ("Commission") Order of Approval for constructing the St. Lawrence Seaway navigation and hydro-power project. In 1956, the Order was amended by the addition of criteria that established the range of Lake Ontario levels, facilitated navigation and hydropower, and included criteria for protection of downstream interests. The amended Order also established the eight-member International St. Lawrence River Board of Control to ensure compliance with the Orders of Approval.

The outflow from Lake Ontario is regulated through several locks and dams (Figure 1). The Moses-Saunders Powerhouse (Figure 2) is the principal regulation structure. The Long Sault Dam provides emergency spillway capacity. This dam has been used on occasion when the required discharge exceeded the capacity of the Powerhouse. The Eisenhower and Snell Locks also provide the navigational link past the Powerhouse.

Plan 1958-A, the first outflow regulation plan, was implemented in

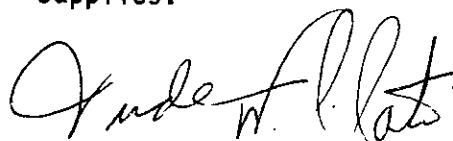
1960. The plan underwent several modifications. The latest improvement, known as Plan 1958-D, was completed in 1963 and is still the regulation plan currently in effect. All of the regulation plans, which require the approval of the Commission, were designed to maintain Lake Ontario levels within a 4-foot target range. Criterion (k) of the Orders requires that all possible relief be provided to riparians during extreme high levels and to navigation and hydropower during extreme low levels. Criterion (k) was used in the early 1960s, when Lake Ontario was experiencing record low levels, and in the early 1970s and mid-1980s, when the levels were at or near record highs (Figure 3).

Other criteria ensure adequate hydropower flows and navigation depths and are aimed to balance the needs of all users of the St. Lawrence River through diligent management.

It has now been nearly 30 years, since the last change was implemented in Lake Ontario's regulation plan. In the intervening years, there have been extremes of water supplies (both wet and dry) and levels (both high and low). Consequently, there are investigations underway to improve upon Plan 1958-D. The St. Lawrence Board's Working Committee has begun this complex effort. The objective of Lake Ontario regulation is to manage its

outflows in such a manner as to optimize conditions for all interests of the Lake Ontario-St. Lawrence River System. However, it should be noted that "optimization" would not necessarily guarantee benefits to the interests at all times. In such cases, it should be understood that any adverse conditions would be minimized.

Several modifications are being considered, including updates to the data base used to develop the current plan and an investigation of new analytical procedures. State-of-the-art techniques in runoff forecasting are being tested for application in Lake Ontario water management. Surveys of recreational boating facilities along the St. Lawrence River and Lake Ontario were undertaken during the summer of 1990. This information, in combination with the real-time level data system which has been established on the river, will provide a clear picture of river conditions. All of these initiatives should increase the Plan's ability to respond to rapidly changing water supplies.



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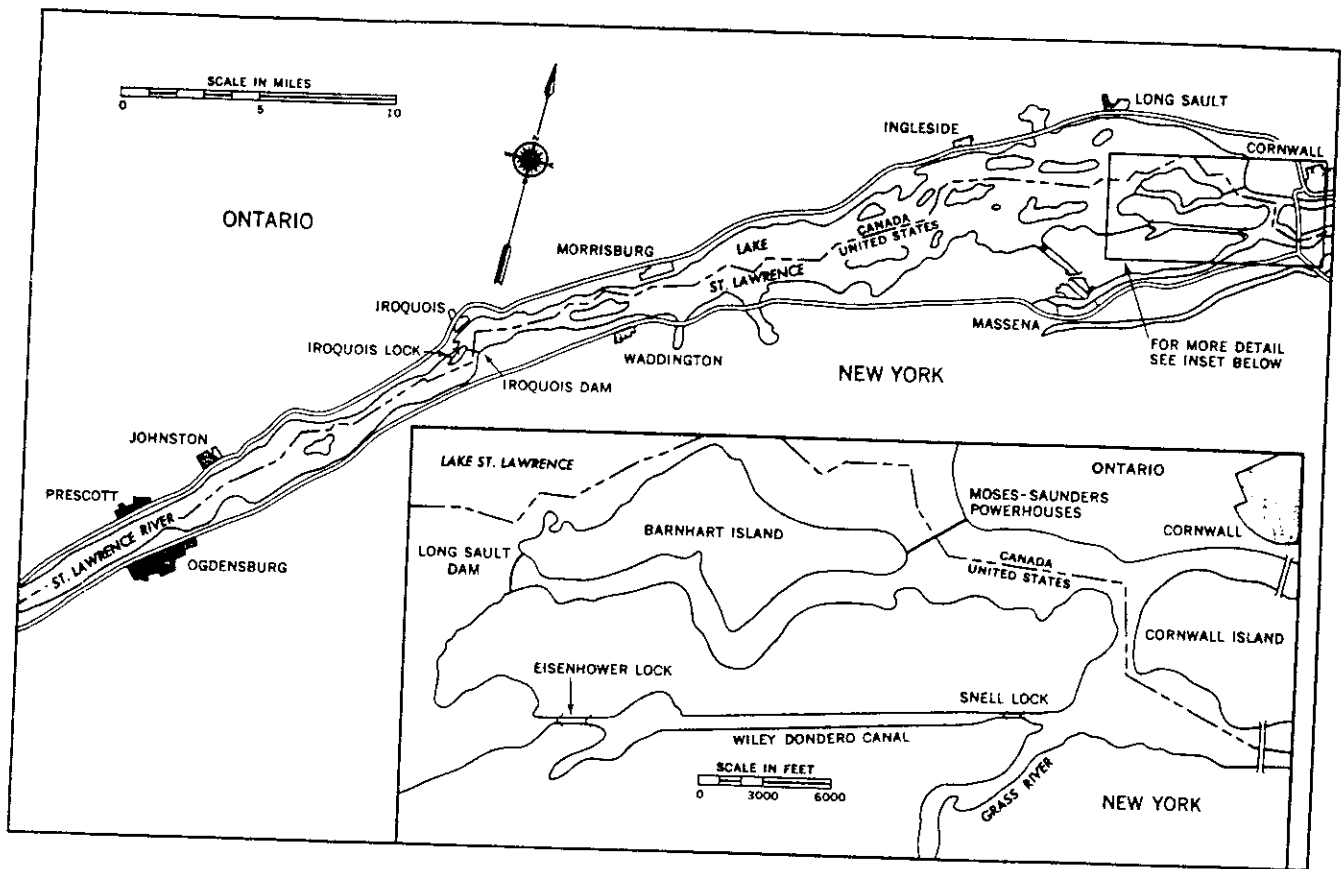


Figure 1 - Lake Ontario Regulatory Works

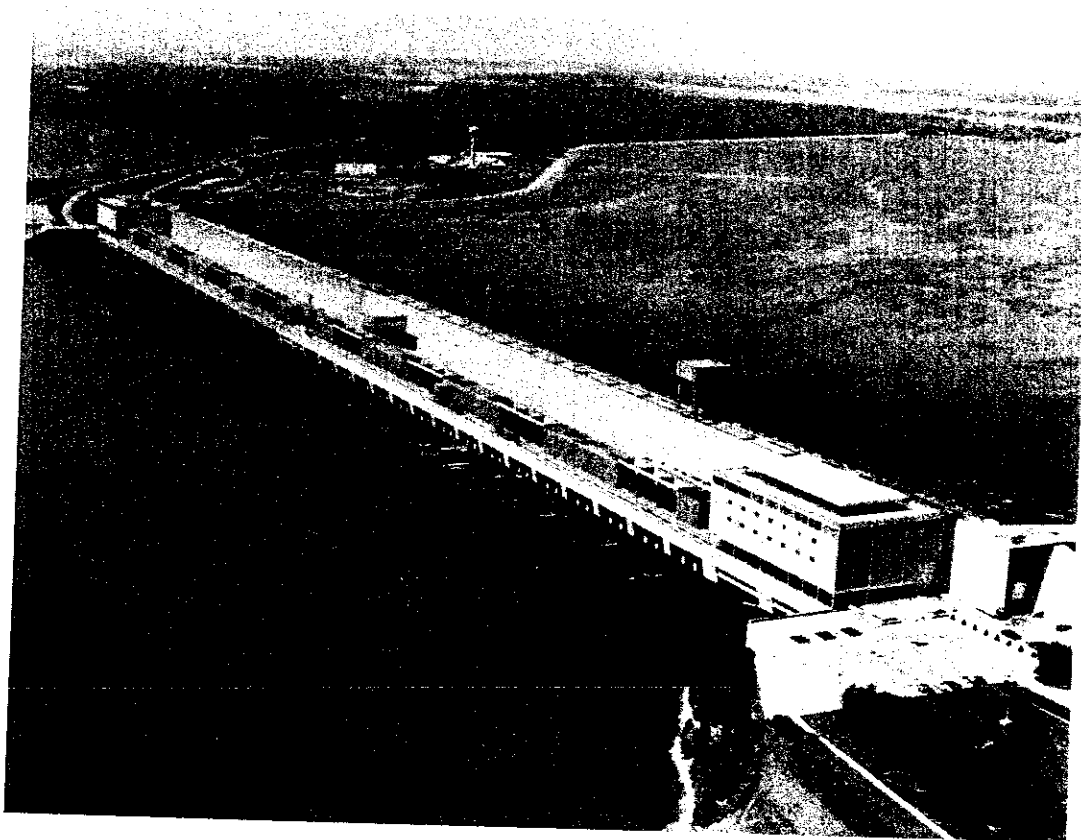


Figure 2 - Moses-Saunders Powerhouse

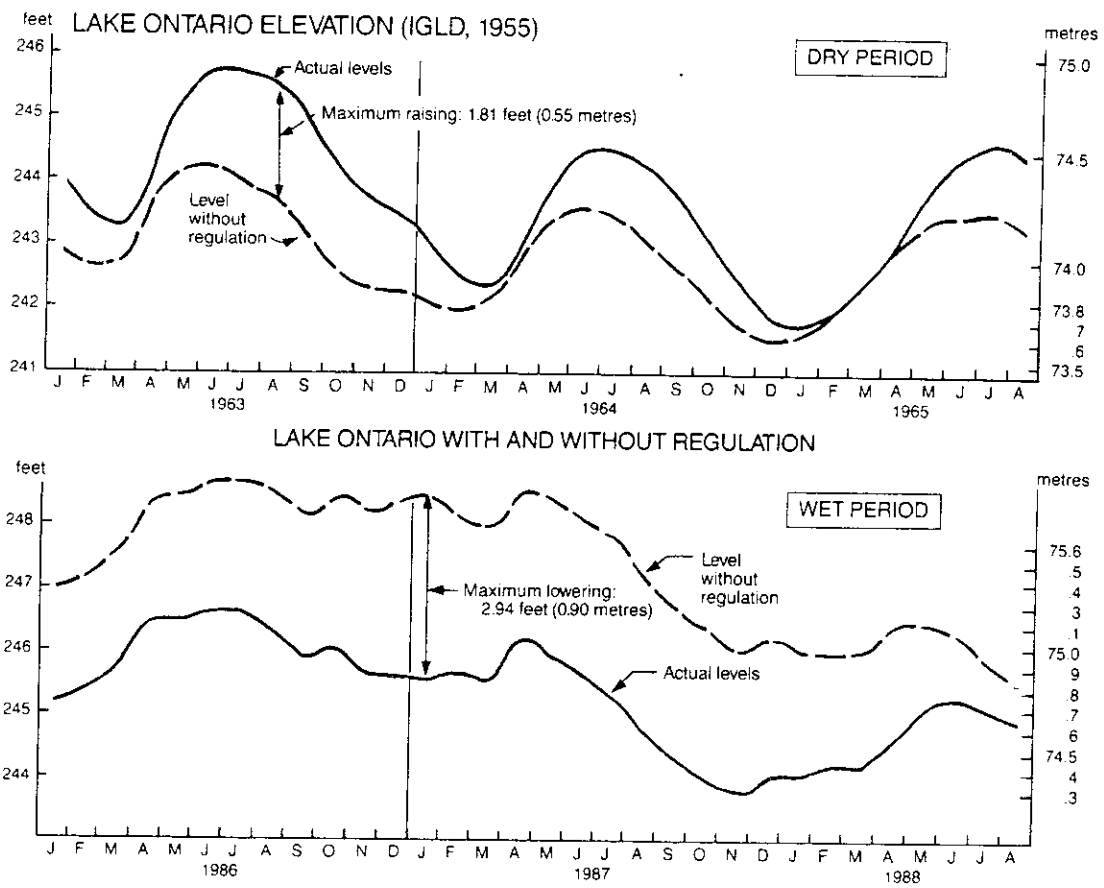


Figure 3 - Effect of Lake Ontario Outflow Regulation
During Water Supply Extremes